



PATENT  
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Attorney Docket No. 05725.0393-00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: )  
David W. CANNELL *et al.* ) Group Art Unit: 1615  
Application No.: 09/614,118 ) Examiner: H. Sheikh  
Filed: July 11, 2000 )  
For: THE USE OF C3-C5 ) Confirmation No.: 1975  
MONOSACCHARIDES TO )  
PROTECT KERATINOUS FIBERS )

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**APPEAL BRIEF UNDER BOARD RULE § 41.37**

In support of the Notice of Appeal filed September 12, 2006, and further to Board Rule 41.37, Appellants present this Appeal Brief. A check for the fee of \$500.00 required under 37 C.F.R. § 1.17(c) is enclosed. The time for filing this Brief has been extended one month by the extension of time filed herewith. Therefore, this Brief is due December 12, 2006, and is timely filed.

This Appeal responds to the April 12, 2006, rejection of claims 30-56, which are set forth in the attached Appendix. If any additional fees are required or if the enclosed payment is insufficient, Appellants request that the required fees be charged to Deposit Account No. 06-0916.

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**I. REAL PARTY IN INTEREST**

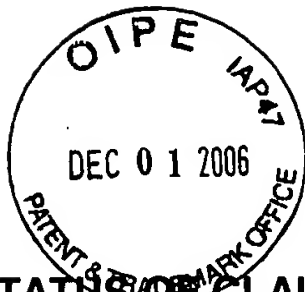
L'ORÉAL S.A. is the assignee of record, as evidenced by the assignment document filed in the U.S. Patent and Trademark Office on August 16, 2000, and recorded at Reel 011047 and Frame 0370.



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## **II. RELATED APPEALS AND INTERFERENCES**

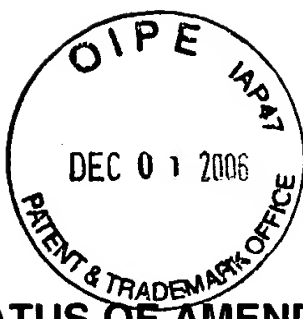
There are currently no other appeals or interferences, of which Appellants, Appellants' legal representative, or Assignee are aware, that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.



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### **III. STATUS OF CLAIMS**

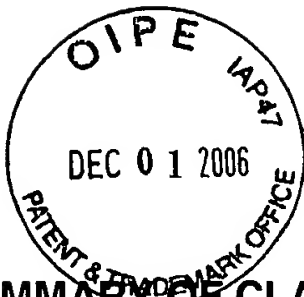
Claims 1-56 are pending in this application. Claims 30-56 stand twice rejected and are being appealed. Claims 1-29 stand withdrawn as drawn to a nonelected invention. A complete listing of the pending claims is included in the attached appendix.



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#### **IV. STATUS OF AMENDMENTS**

No amendments have been made in response to the Office Action mailed April 12, 2006.



## **V. SUMMARY OF CLAIMED SUBJECT MATTER**

### **A. OVERVIEW OF THE CLAIMED SUBJECT MATTER**

Keratinous fibers, such as hair, are constantly exposed to harsh extrinsic conditions that damage the fibers. Specification, page 1, ¶2.<sup>1</sup> One form of damage caused by extrinsic conditions is a disruption in the organized structure of the keratinous fiber, called the  $\alpha$ -structure, which may be accompanied by a decrease in tensile strength. *Id.* Because the  $\alpha$ -structure is sensitive to extrinsic conditions, the extent of damage to a keratinous fiber can be determined by monitoring changes in the  $\alpha$ -structure. *Id.* at 7, ¶2. Techniques for monitoring the  $\alpha$ -structure include X-ray diffraction and differential scanning calorimetry (DSC). *Id.*, ¶3. The specification describes DSC in detail. *Id.* at 7-10. Tensile strength can also be used to detect detrimental changes in the chemical composition of a keratinous fiber. *Id.* at 11.

Sugars have been applied to keratinous fibers for a variety of reasons, but not all sugars are the same and not all sugars impart the same properties when applied to a keratinous fiber. *Id.* at 4. In particular, the use of sugars that protect hair from extrinsic damage and protect the  $\alpha$ -structure of hair from such damage has not been demonstrated. *Id.* at 4-5, bridging paragraph. The inventors have found, however, that a special class of sugars, C3 to C5 monosaccharides, provides keratinous fibers with an improved protection from extrinsic conditions and helps to restore the damage caused by those conditions. *Id.* at 7, ¶1; see also Tables 5-19. The invention therefore

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<sup>1</sup> The references to the specification in this Brief are merely intended to facilitate explaining how the application provides exemplary disclosure relating to the claimed subject matter. Those references are not necessarily exhaustive. Furthermore, those references should not be construed as limiting the claims.



provides methods of protecting a keratinous fiber from extrinsic damage and/or repairing keratinous fibers following extrinsic damage, wherein the methods comprise applying compositions comprising this special class of sugars. *E.g., id.* at 6.

### **B. Support For The Claimed Subject Matter**

The subject matter of independent claim 30 is a method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage. This is described in the specification in various locations, for example on page 6, ¶13. The methods comprise applying to said keratinous fiber a composition comprising at least one sugar chosen from C3 to C5 monosaccharides and derivatives thereof; and heating said keratinous fiber to at least 45°C, wherein said composition is applied prior to said heating or during said heating. The specification describes this methodology, for example, on page 18, and in the other Examples. As shown in the specification in Tables 5-19, the at least one C3 to C5 monosaccharide is present in an amount effective to protect said keratinous fiber or repair said keratinous fiber. As described in the specification on pages 5-6, “protecting” a keratinous fiber means preserving a greater degree of the  $\alpha$ -structure and/or the tensile strength of the keratinous fiber following treatment of the keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition; and “repairing” a damaged keratinous fiber means increasing the  $\alpha$ -structure and/or tensile strength of the damaged keratinous fiber following treatment of the damaged keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition.

As recited in claims 31 and 32, one of the special classes of sugars that are useful in the practice of the invention are the pentoses (C5 sugars). This is described in the specification on page 12, ¶3. The specification also describes in that location that those pentoses can be chosen from aldopentoses and ketopentoses.

Claim 33 sets forth individual species of aldopentoses that may be used in the methods of the invention. The specification on page 12, ¶3 discloses aldopentoses, and that the aldopentoses are chosen from xylose, arabinose, lyxose, and ribose.

In claim 34, individual species of ketopentoses that may be used in the methods are recited. The specification on page 12, ¶3 describes ketopentoses, and that they can be chosen from ribulose and xylulose.

Claims 35-38 recite another of the special classes of sugars that are useful in the practice of the invention, tetroses (C4 sugars), and individual examples of both aldotetroses and ketotetroses. The specification describes the tetrose class of sugars on page 12, ¶3, and notes that tetroses include aldotetroses, such as erythrose and treose, and ketotetroses, such as erythrulose.

In claims 39-42, the third special class of sugars useful in the practice of the invention is recited both generically as trioses (C3 sugars), as subclasses (aldotrioses and ketotrioses), and specifically as individual examples. The general class of trioses for use in the methods of the invention is described in the specification on page 12, ¶3. The aldotriose and ketotriose subclasses, as well as the individual species of glyceraldehyde and dihydroxyacetone are also described at that location.

As recited in claim 43, C3 to C5 monosaccharides also include furanoses and derivatives thereof. Those C3 to C5 monosaccharides are described in the specification at the top of page 13.

Claim 44 recites specific derivatives of C3 to C5 monosaccharides chosen from amine derivatives, hemiacetal derivatives, hemiketal derivatives, and oxidized derivatives. Those derivatives are described in the specification on page 13, ¶1.

Similarly, claim 45 recites derivatives chosen from dimers and oligomers of C3 to C5 monosaccharides, while claim 46 recites a specific dimer: xylobiose. Dimers and oligomers, including xylobiose, are also described on page 13, ¶1 of the specification.

Claims 47-50 and 52 each recites that the composition used in the methods of the invention may further comprise at least one additional sugar. Claim 47 does this generically, while claims 48-50 set forth those additional sugars in greater detail. Claim 52 recites the amounts at which the at least one additional sugar is present in the composition. General support for the inclusion of at least one additional sugar can be found in the specification at page 13, ¶2. The specification describes specific examples of the at least one additional sugar on page 14, ¶1, while ¶2 of that page describes the amounts of those sugars.

Claim 51 similarly sets forth the amounts of the at least one sugar present in the composition used in the methods. Those amounts are described in the specification on page 14, ¶2.

Claim 53 recites that the composition used in the method can be in the form of a liquid, oil, paste, stick, dispersion, emulsion, lotion, gel, or cream. Those forms are described in the specification on pages 14-15, in the bridging paragraph.

Claim 54 recites that the keratinous fiber is chosen from hair, eyelashes, and eyebrows. Those keratinous fibers are described in various locations in the specification, for example, on page 1, ¶1.

Claim 55 recites examples of different causes of extrinsic damage. Those examples are supported in the specification at least on page 1, ¶1.

Finally, claim 56 recites that the composition used in the method both protects a keratinous fiber from extrinsic damage and repairs a keratinous fiber following extrinsic damage. Support for this claim can be found throughout the specification, in particular in the examples, but also on page 6 in the paragraph that continues on to page 7.

**VI. GROUNDS OF REJECTION**

A. Claim 30 stands rejected as containing new matter, presumably under 35 U.S.C. § 112, first paragraph.

B. Claims 30-56 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the enablement requirement.

C. Claims 30-56 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over:

(1) Wisotzki et al. (U.S. Patent No. 4,900,545) ("*Wisotzki*") in view of Buheitel (U.S. Patent No. 6,116,250) ("*Buheitel*") or Naito et al. (U.S. Patent No. 4,935,229) ("*Naito*");

(2) Koga et al. (U.S. Patent No. 5,660,838) ("*Koga*") in view of *Buheitel* or *Naito*; and

(3) Syed et al. (U.S. Patent No. 5,641,477) ("*Syed*") in view of *Buheitel* or *Naito*.

## **VII. ARGUMENT**

Each claim of the present application is separately patentable, and upon issuance of a patent will be entitled to a separate presumption of validity under 35 U.S.C. § 282. The arguments set forth below are arranged under subheadings, and in accordance with 37 C.F.R. § 41.37(c)(1)(vii), these subheadings indicate the claims for which patentability is argued separately.

### **A. The Subject Matter of Claim 30 Is Supported in the Original Disclosure**

The Office states that “instant claim 30 presents new matter since there is lack of support for this limitation in the present specification.” (Office Action, page 2.) The Office acknowledges that the specification supports “at 45°C” and at “130°C”, but finds that “*at least* 45°C is not supported by the instant specification.” (*Id.*)

Appellants amended claim 30 in the Reply filed February 2, 2005. In that paper, they noted that support for the amendment could be found throughout the specification, and they specifically pointed to several sources of support. In particular, Appellants noted that pages 6-7 describe the generic concept that a composition of the invention can be used to protect keratinous fiber from heat, such as that from hair dryers or curlers. (Feb. 2, 2005, Reply, page 11.) Appellants also pointed out that the various Examples describe applying compositions of the invention to swatches of hair heated with a blow dryer (referred to as “treated at 45°C”) or to swatches heated with a flat iron (referred to as “treated at 130°C”). (*Id.*)

The Office does not provide any reasons why the pages of the specification relied upon fail to provide adequate written support. It is well settled that the “subject

matter of the claim need not be described literally (*i.e.*, using the same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement.” M.P.E.P. § 2163.02 (8th Ed., May 2004). Further, M.P.E.P. § 2163.05.III goes on to note that “[w]ith respect to changing numerical range limitations, the analysis must take into account which ranges one skilled in the art would consider inherently supported by the discussion in the original disclosure.” § 2163.05.III.

In this case, the disclosure provides both the generic concept of protecting a keratinous fiber from extrinsic damage caused by heat, and working examples that include heating steps in which the keratinous fiber is heated to 45°C or 130°C. Thus, the skilled artisan would readily appreciate that the discussion in the original disclosure supports a heating step that includes not only 45°C and 130°C, but also all points in between those two values. Moreover, the original disclosure supports more than just the two temperatures mentioned in the working examples: it discloses the generic concept that the compositions can be used to protect keratinous fibers from heat. Thus, the facts of this case are not the same as those of *In re Wertheim*, 541 F.2d 257, 191 U.S.P.Q. 90 (CCPA 1976), where the original specification placed a boundary on the upper limit of a range but the claim language extended beyond that boundary.

The skilled artisan would readily appreciate that Appellants had described a method in which the keratinous fiber was heated to “at least” 45°C. The “45°C” aspect of the language is explicitly supported by the various examples. The “at least” aspect of the language is supported by the range demonstrated in the working examples in combination with generic disclosure. Accordingly, Appellants respectfully submit that this rejection is in error and ask that it be withdrawn.

**B. The Skilled Artisan Would Be Able to Practice The Subject Matter of Claims 30-56 with No More Than Routine Experimentation**

The Office alleges that the specification fails to enable the subject matter of claims 30-56, and so rejects those claims under 35 U.S.C. § 112, first paragraph. (Office Action, page 3.) It is the Office's position that "it would require 'undue' and painstaking experimentation to arrive at the instant invention to determine which particular temperature or temperature ranges would be necessary for effectively protecting or repairing keratinous fibers." (*Id.* at 5.)

**1. The Office has failed to establish a reason to question the enablement of the claimed invention.**

The M.P.E.P. makes clear that "[i]n order to make [an enablement] rejection, . . . [there is an] initial burden to establish a reasonable basis to question the enablement provided for the claimed invention." M.P.E.P. § 2164.04 (8th Ed., May 2004) (internal citations omitted). Any conclusion regarding non-enablement should be based on specific findings of fact that are supported by evidence. *See id.* "The minimal requirement is . . . to give reasons for the uncertainty of the enablement." *Id.* In particular, references should be supplied if possible and specific technical reasons are required. *Id.*

In this case, the Office has failed to meet this initial burden. In particular, it fails to provide any specific findings or cite any evidence to support its position that the working examples fail to support the full scope of the claims. In the April 12, 2006, Office Action, the Office acknowledged the presence of working examples employing temperatures of 45°C and 130°C and that the level of skill and predictability in the art is



high. (Office Action, page 4.) Nevertheless, it alleged that the “specification provides no guidance or direction on how to protect keratinous fiber from extrinsic damage or repair keratinous fiber using a temperature of ‘at least’ 45°C as instantly claimed.” (*Id.*) The Office concludes that the “working examples are insufficient to establish the instant method of protecting or repairing a keratinous fiber.” (*Id.*)

Here, the Office does no more than allege that the working examples are insufficient without pointing to any specific evidence or providing any technical reasoning in support of its position. Unsupported allegation does not meet even the minimum requirement that the Office give reasons for the uncertainty of the enablement. Accordingly, the rejection is improper and should be reversed.

**2. The specification enables one of skill in the art to make and use the claimed invention.**

Notwithstanding the Office’s failure to meet its initial burden for establishing a *prima facie* case of non-enablement, Appellants respectfully submit that the specification contains sufficient information to enable one skilled in the art to make and use the claimed invention based upon the factors summarized in *In re Wands*, 858 F.2d 731, 737, 8 U.S.P.Q.2d 1400, 1404 (Fed. Cir. 1988).

As the Office acknowledges, the level of skill and predictability in this art is high. (Office Action, page 4.) Further, the disclosure provides working examples demonstrating that the claimed C<sub>3</sub> to C<sub>5</sub> monosaccharides and derivatives thereof protect and repair keratinous fibers heated with a blow dryer (referred to as “treated at 45°C”) and heated with a flat iron (referred to as “treated at 130°C”). The specification

also notes in the paragraph bridging pages 6-7 that the method can be applied generically to protect or repair a keratinous fiber subjected to heat.

Further, the specification provides detailed guidance as to how one skilled in the art determines whether a particular composition protects or repairs a keratinous fiber heated to any particular temperature. The Examples, such as Example 3, set out the steps for subjecting a keratinous fiber to heat treatment and notes that both doublet peak area and dry tensile strength are measurements that permit the skilled artisan to compare the effect of heat on treated hair versus untreated hair. The specification on pages 7 to 10 also provides a detailed discussion of the use of differential scanning calorimetry (DSC) to measure water loss and detect the changes in hair structure that occur as hair is heated. For example, when hair is subject to a temperature of around 230°C, DSC detects a doublet peak that is thought to indicate unfolding of the  $\alpha$ -helix and cystine decomposition. Given this detailed guidance regarding how to measure changes in the hair structure exposed to different temperatures, the effect of a composition of the invention can be readily determined by one of skill in the art over a wide range of temperatures.

The working examples and extensive guidance provided by the disclosure enables the full scope of the claims. Applicants respectfully submit that the Office's assertion that undue experimentation would be required to practice the invention as claimed is unsupported and should be reversed.

**C. Claim 30 and Claims Dependent Therefrom Are Patentable Under 35 U.S.C. § 103(a) At Least Because there Is No Motivation to Combine the References Without Hindsight**

Claims 30-56 stand rejected under 35 U.S.C. § 103 as allegedly unpatentable over *Wisotzki*, or *Koga*, or *Syed*, each in view of *Buheitel* or *Naito*. (Office Action, page 5, 9, and 13.) Appellants will address each combination of references in turn.

**1. The ordinary artisan would not have been motivated to combine the teaching of either *Buheitel* or *Naito* with those of *Wisotzki* to arrive at the claimed method.**

*Wisotzki* teaches compositions that can be used in hair rinses to reduce the number of split ends. See, e.g., the Example at columns 5-6. The compositions comprise at least one mono- or di-saccharide, but glucose, a C6 sugar, is preferred. Col 2, lines 36-49. In the Examples, *Wisotzki* prepares hair rinse compositions and allows them to cool to either 25°C or 30°C before use. Column 5, lines 44-68. It is unclear from the examples, however, if the compositions are actually applied to a keratinous fiber at those temperatures. Even if the compositions are applied at 25°C or 30°C, the passage in *Wisotzki* that describes heating the compositions during their formulation is not a teaching that the keratinous fibers should be heated. Appellants respectfully note that *Wisotzki* does not anywhere teach that the keratinous fiber should be heated during or after the application of the composition.

The Office acknowledges that *Wisotzki* does not teach heating a keratinous fiber to at least 45°C. (Office Action, page 7.) To overcome this shortcoming in the teachings of *Wisotzki*, the Office turns to the teachings of either *Buheitel* or *Naito*.

*Buheitel* teaches a method of permanently shaping hair. During some of the steps of that method, *Buheitel* teaches that heat can be applied to the hair. The Office in particular points out that the hair can be heated to 30 to 45°C while the permanent shaping composition is in place. (Office Action, page 7.) As the Office notes, the purpose of the heating step appears to be to reduce the reaction time. (*Id.* at 8.) *Buheitel* also teaches that during styling, the hair can be dried at 30 to 45°C (col. 5, line 38 to col. 6 line 3) or at 30 to 55°C (col. 5, lines 4-17). According to the Office, the ordinary artisan would have been motivated to combine the teaching of *Buheitel* regarding the use of elevated temperatures with those of *Wisotzki* for repairing split ends

because *Buheitel* teaches that it is advantageous to allow the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C and alternatively at 30° to 55°C in order to lessen the reaction time for oxidatively treated hair or severely damaged hair.

(Office Action, page 8.)

Applicants traverse the Office's position. "The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness." M.P.E.P. § 2142. The *prima facie* case of obviousness must meet several essential criteria, including that the prior art references must teach or suggest all of the claim limitations, and that there is some reason, suggestion, or motivation in the prior art to lead one of ordinary skill in the art to combine the teachings of the references in the manner proposed by the Office. M.P.E.P. § 2143. That suggestion or motivation must be found in the prior art, not in the Applicant's disclosure. *Id.* Further, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the

prior art also suggests the desirability of the combination.” M.P.E.P. § 2143.01 (citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)). Thus, without a clear and particular reason to combine or modify the teachings of the references, the identification of the individual elements of a claimed invention in the prior art is not sufficient to negate patentability. See, e.g., *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457 (Fed. Cir. 1998).

Here, the Office fails to provide a clear and particular reason to modify the teachings of the primary reference by including a heating step. Although the Office maintains in its “Response to Arguments” on page 19 that *Wisotzki* teaches heating, Appellants again respectfully note that the only “heating” taught by *Wisotzki* is in formulating the composition, which is not a teaching that the keratinous fiber should be heated during or after the application of the composition. Nor does *Wisotzki* teach or suggest that it would have been desirable to reduce the length of time in which that reference’s split end repairing composition was left in contact with the hair. Indeed, the contact time preferred by *Wisotzki* is already short — only 10 minutes. Col. 6, lines 27-29. *Buheitel* does not remedy the defect in the primary reference at least because *Buheitel*’s teaching is limited to heating hair during a permanent hair shaping process. Nothing in *Buheitel* teaches or suggests that a heating step would be advantageous with respect to repairing split ends with a composition of *Wisotzki*. Thus, Appellants respectfully submit that the Office has failed to establish a *prima facie* case. Instead, it has taken the words in Appellants’ claims as a blueprint with which to identify claim elements in references that are directed to different compositions for use in different

methods. For these reasons, Appellants respectfully request that the rejection be reversed.

As an alternative source of the teaching that hair can be heated to temperatures that are at least 45°C, the Office relies on the teachings of *Naito*. (Office Action, page 8.) *Naito* teaches hair waving agents comprising a thioglyceryl alkyl ether or 1-phenyl-2-mercaptoethanol as a main ingredient. *Naito*, Abstract. The Office points to *Naito*'s teaching of methods of using the hair waving agent comprising applying the agent and heating the hair to 40 to 160°C, and that the composition of the invention are advantageous because they do not involve highly concentrated alkaline agents or reducing and oxidizing substance that damage the hair. (Office Action, page 8.) From those teachings, the Office concludes that the ordinary artisan would have been motivated to:

employ higher temperatures, such as the 40° to 160°C, as taught by *Naito et al.* within the processes employed by *Witsozki*, who teaches a method of repairing split-end hair, comprising sugars because *Naito et al.* teach that it is especially advantageous to treat healthy hair at higher temperatures (*i.e.*, 40° to 160°C) and also teach that damage to hair caused by elution of hair proteins can be mitigated, when employing such temperatures (*i.e.*, 40° to 160°C).

(*Id.* at 9.)

Appellants respectfully submit that the mere presence of a heating step in the teachings of *Naito*, without more, does not provide the requisite motivation to employ a heating step within the method of *Wisotzki* for treating split ends. As noted *supra*, *Wisotzki* does not teach or suggest that there is any reason to heat a keratinous fiber that has been contacted with their split-end reducing composition. Although *Naito*

teaches a method that comprises a heating step, it is limited to methods using their permanent waving composition, which is not a composition for treating split ends. Also, it must be noted that the mitigation of damage to which *Naito* refers at col. 5, lines 54-57, is in reference to the replacement of harsh alkaline agents or reducing and oxidizing substances with a thioglyceryl alkyl ether or 1-phenyl-2-mercaptoethanol: that passage does not suggest that heating is itself in any way advantageous.

*Naito*, like *Buheitel*, does not teach or suggest that a heating step would be advantageous with respect to repairing split ends with a composition of *Wisotzki*. Once again, the Office has simply identified elements of the claims in the two cited references without pointing to any clear and particular reasons why the ordinary artisan would, without hindsight knowledge of Appellants' invention, combine the teachings in the manner proposed by the Office. Because the Office has failed to establish a *prima facie* case regarding the teachings of *Wisotzki* and *Naito*, Appellants respectfully submit that the rejections of the claims as obvious in view of their teachings are in error and should be reversed.

**2. The ordinary artisan would not have been motivated to combine the teaching of either *Buheitel* or *Naito* with those of *Koga*.**

*Koga* teaches moisture-retaining compositions for the skin that contain the C5 disaccharide xylobiose. *Koga*, col. 1, lines 28-36 and 44-58. Among the skin preparations taught are hair-care products such as hair rinses, conditioners, and shampoos. Col. 2, lines 21-26. Xylobiose is a disaccharide, not a monosaccharide as recited in the claims. The Office points, however, to the teachings of *Koga* at col. 2, lines 37-46, that the xylobiose used can be obtained by saccharifying xylan, and that

this process results in the inclusion of some xylose, a C5 monosaccharide, in the composition. (Office Action, page 10.) It is further the position of the Office that because *Koga* teaches that a shampoo containing xylobiose imparts “a natural oiliness when actually applied to the hair [that is] satisfactory in reducing excessive roughness and dryness of the hair” this “is, in essence, a reparative process for improving damaged hair.” (*Id.* at 11.)

The Office acknowledges that *Koga* does not teach the recited step of heating a keratinous fiber to at least 45°C. (*Id.*) It nevertheless characterizes *Koga* as “recogniz[ing] and teach[ing] obtaining a temperature of the composition to 35°C” in its “Response to Arguments.” (*Id.* at 19.) The only time *Koga* discusses a temperature, however, is with respect to the humidity chamber experiments at column 4-7. But in those experiments, *Koga* does not teach applying the composition to a keratinous fiber prior to or during the heating. Thus, besides not teaching the recited temperature, *Koga* does not teach or suggest that it is desirable to heat a keratinous fiber during or after the application of the xylobiose-containing composition. Heating the composition in a humidity chamber experiment is not a teaching of heating a keratinous fiber to which the composition has been applied. *Koga*, therefore, not only does not teach the claimed method step of heating a keratinous fiber, but it also does not provide any suggestion to heat the keratinous fiber during or after the application of the composition.

To remedy the deficiencies in the teachings of *Koga*, the Office again turns to the teachings of *Buheitel* and *Naito*, which have already been discussed. Appellants respectfully submit that the ordinary artisan would not have been motivated to combine the teachings of either *Buheitel* or *Naito* with the teachings of *Koga*. In particular,



neither *Buheitel* nor *Naito* involve a composition for retaining moisture, as taught in *Koga*, so the methods of *Buheitel* and *Naito* are not analogous to the methods of *Koga*.

Nevertheless, the Office alleges that the ordinary artisan would have been motivated to use the heating step taught by *Buheitel*

because *Buheitel* teaches that it is advantageous to allow the permanent shaping composition to advantageously react at a higher temperature, particularly at 30° to 45°C and alternatively at 30° to 55°C in order to lessen the reaction time for oxidatively treated hair or severely damaged hair.

(Office Action, page 12.) This is the same motivation as alleged for combining the teachings of *Wisotzki* and *Buheitel*, see *id.* at 8, and Appellants respectfully submit it fails for the same reasons. As already mentioned, *Koga* does not teach heating a keratinous fiber, despite the Office's reference to humidity chamber experiments in which the composition (not applied to a keratinous fiber) was heated. Further, if the alleged motivation is to "lessen the reaction time" this implies that something in the primary reference must involve an extended treatment step. But, *Koga* does not teach or suggest an extended treatment step. In the shampoo example (Example 7) upon which the Office relies, for instance, there is no mention of the need to leave the shampoo in the hair for any period of time. Accordingly, there cannot have been any motivation to heat the hair to lessen a non-existent "reaction time."

The proposed combination of *Koga* in view of *Naito* also fails. As noted *supra*, *Koga* does not teach or suggest that there is any reason to heat a keratinous fiber that has been contacted with the xylobiose-containing composition. *Naito*'s heating step is limited to methods using a permanent waving composition, and *Naito* does not suggest that heating is itself in any way advantageous. Instead, the teaching of mitigating

damage to which the Office refers is in reference to the use of *Naito's* thioglyceryl alkyl ether or 1-phenyl-2-mercaptoethanol compositions rather than older, harsher chemicals. Thus, there is no reason for the ordinary artisan to add *Naito's* heating step to the method of *Koga*.

Appellants respectfully submit that the Office has failed to point to any clear and particular reasons why the ordinary artisan would, without hindsight knowledge of Appellants' invention, combine the teachings of *Koga* with *Buheitel* or *Naito* in the manner proposed by the Office. Accordingly, the Office has failed to establish a *prima facie* case. Appellants respectfully submit that the rejections are therefore in error and should be reversed.

**3. The ordinary artisan would not have been motivated to combine the teaching of either *Buheitel* or *Naito* with those of *Syed*.**

*Syed* teaches a lanthionization process that comprises applying a composition comprising a hydrogenated starch or sugar to hair to relax the hair fibers, then removing the composition. *Syed*, col. 2, lines 9-15. Lanthionization is the chemical term for relaxing curly hair by modifying the cystine bonds to lanthionine bonds. Col. 1, lines 20-28. This process damages the hair. Col. 1, lines 36-46. According to *Syed*, the inclusion of the hydrogenated starch or sugar in the composition reduces the damage that the lanthionizing composition causes to the hair. Col. 2, lines 48-56. *Syed* teaches that representative sugars for use in the invention are sucrose (a C6 disaccharide), glucose (a C6 monosaccharide), fructose (a C6 monosaccharide), sorbitol (a C6 sugar alcohol), and glycerol (a C3 sugar alcohol). Col. 3, lines 5-7. The preferred sugar, however, is the C6 sugar sucrose or the C6 sugar alcohol sorbitol. Col. 3, lines 7-8. As

the Office acknowledge, *Syed* does not teach the step of heating a keratinous fiber to at least 45°C. (Office Action, page 15.) Further, Appellants respectfully note that there is nothing in the teachings of *Syed* that in any way suggests that it is advantageous to heat the keratinous fiber to minimize the damage that results from the lanthionizing composition.

As for the other primary references, the Office alleges that the deficiencies in the teachings of *Syed* are corrected when that reference's teachings are taken in view of *Buheitel* or *Naito*, discussed *supra*. Here, too, however, the Office fails to point to clear and particular reasons why the ordinary artisan would have been motivated to combine the teachings of either *Buheitel* or *Naito* with the teachings of *Syed*. Neither *Buheitel* nor *Naito* involve a lanthionizing composition, as taught in *Syed*, so the methods of *Buheitel* and *Naito* are not analogous to the methods of *Syed*. Further, although the Office again alleges that the motivation to combine the teachings of *Buheitel* is to "lessen the reaction time," nothing in *Syed* indicates that prolonged contact increases the damage. Instead, *Syed* postulates that the lanthionizing composition causes swelling of the hair fiber that is countered when hydrogenated starch or sugar is included in the composition. *Syed*, col. 3, lines 38-54. *Syed* does not teach or suggest that heating the hair would have any beneficial effect. Accordingly, Appellants respectfully submit that the Office has failed to establish a *prima facie* case at least because its proposed motivation is not supported in the teachings of the references and is not based upon a sound technical reasoning.

Regarding the proposed combination with *Naito*, Appellants have previously noted that *Naito* does not suggest that heating is itself in any way advantageous and

that the teaching of damage mitigation to which the Office refers is in reference to the use of *Naito*'s thioglyceryl alkyl ether or 1-phenyl-2-mercaptoethanol compositions rather than older, harsher chemicals. Although *Naito* teaches a method that comprises a heating step, it is limited to methods using their permanent waving composition, which is not a lanthionizing composition. Nothing in *Syed* or *Naito* suggests that it would have been desirable to take the heating step of *Naito* and use it in the method of *Syed*, which employs a lanthionizing composition. Without some teaching or suggestion in those references, or at least a sound technical reasoning provided by the Office, there is no motivation to combine the teachings of the references and the Office has failed to establish a *prima facie* case of obviousness.

Appellants again respectfully note that "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01 (citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)). Here, the Office has failed to provide a clear and particular reason to combine or modify the teachings of the references, and the identification of the individual elements is not sufficient to negate patentability. See, e.g., *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457 (Fed. Cir. 1998). For at least the reasons discussed, the teachings of *Syed* in view of either *Buheitel* or *Naito* do not render any of the claims unpatentable, and Appellants respectfully request reversal of those rejections.

**D. Claims 33-44 Are Separately Patentable Under 35 U.S.C. § 103(a)  
Because The Office Points To No Reasons Why The Ordinary Artisan  
Would Have Been Motivated To Select The Specific Sugars Or Sugar  
Subsets Claimed**

Appellants respectfully submit that claims 33-44 are independently patentable under 35 U.S.C. § 103(a). Claims 33-44 recite the tetrose and triose classes of monosaccharides, individual species of pentose, tetrose, and triose monosaccharides, and C3 to C5 monosaccharide derivatives. The Office, however, has failed to establish a *prima facie* case of obviousness because it provides no reason why the ordinary artisan would have been motivated to select any of those recited sugars or sugar classes. Instead, the Office argues in essence that, based on the teaching of the references, it would have been obvious to use any sugar.

According to the Office, *Wisotzki* teaches:

a method for the regeneration of hair split ends and for caring for and revitalizing mistreated hair, comprising applying to the hair , a treatment composition comprising mono- or disaccharides, more especially the pentoses (5 C-atoms) and hexoses (6 C-atoms) and also the disaccharides derived from the pentoses and hexoses. Witsozki [sic] teaches that the mono- or disaccharides are any aldoses and ketoses or their mixtures . . . [and that] . . . suitable monosaccharides include glucose, mannose, galactose, ribose, arabinose, xylose, fructose, and sorbose, while suitable disaccharides include sucrose, lactose, maltose and cellobiose.

(Office Action, page 6.)

Appellants respectfully note that *Wisotzki* uses a C6 sugar (glucose) in the examples and mentions in column 2 at lines 47-49 that glucose is preferably used in the composition for repairing split ends. Since glucose, a C6 sugar, is preferred, the ordinary artisan would not have been motivated to select other sugars for inclusion in a

method that is not the same as *Wisotzki's* method. Contrary to the Office's position, it is not simply a matter of substituting a C5 sugar into the examples of *Wisotzki*, because as discussed *supra*, *Wisotzki* does not teach the claimed method steps. Instead, the ordinary artisan would have to have some reason not only to select a non-preferred sugar, but also to select that sugar for inclusion in a different method.

The Office counters in its "Response to Arguments" that Appellants "have not demonstrate any unexpected or superior results which accrue from the use of the instantly claimed (C<sub>3</sub> to C<sub>5</sub>) sugars." (Office Action, page 20.) Respectfully, Appellants are not obligated to provide such evidence unless the Office has established a *prima facie* case of obviousness. For the reasons discussed, the Office has not met that initial burden.

Nevertheless, Appellant's data in the specification indicate that not all sugars are the same. For example, the various Examples describe applying the compositions of the invention to swatches of hair at 45°C. Some of the swatches are then heated with a blow dryer, and are referred to as "treated at 45°C." Other swatches are heated to 130°C with a flat iron, and are referred to as "treated at 130°C." Example 3 provides a particularly clear description of the heat cycle test described more generally in other sections of the specification. Tables such as 11 and 12 show that pentoses, but not the hexose D-glucose, protect hair from extrinsic damage at these temperatures.

The Office also cites *Koga*, which is directed to "xylobiose-containing skin preparations." See Abstract. As noted *supra*, *Koga* does not teach or suggest heating a keratinous fiber. Appellants further note that *Koga's* teachings are limited to xylobiose, a C5 dimer, although the reference indicates that the related products of

xylose and xylotriose may be present in the xylobiose-composition without any impairment of the moisture-retaining properties of xylobiose. Col. 2, lines 37-46.

Appellants respectfully submit that the narrow and xylobiose-specific teachings of *Koga* do not in any way suggest that other C3 to C5 monosaccharides could be substituted in the composition of *Koga*. Further, as discussed in detail *supra*, even if such a substitution were made, *Koga* does not teach the claimed method steps.

*Syed* also does not provide any motivation to select a C3 to C5 sugar from among the sugars mentioned. *Syed* is directed to a process for relaxing hair fibers with a lanthionizing composition. Col. 2, lines 21-27. The composition comprises a hydrogenated starch hydrolysate and/or a sugar. *Id.* Preferably, the sugars are sucrose or sorbitol. Col. 3, lines 7-8. In addition, *Syed* uses C6 sugars in the examples. Among the representative sugars listed in col. 3, lines 5-8, only one sugar, glycerol, is a C3 to C5 monosaccharide or derivative thereof. Thus, to arrive at the claimed invention, one of ordinary skill in the art would have to first choose a sugar rather than a hydrogenated starch hydrolysate. Then, one would have to ignore the preferred embodiments of sucrose or sorbitol and pick out the single C3 sugar alcohol taught by *Syed*. Finally, as discussed *supra*, one of ordinary skill in the art would have to modify the method steps of *Syed* to include a step of heating a keratinous fiber to at least 45°C. Appellants respectfully submit that the multiple selections and modifications involved in reaching the claimed method render it unobvious over *Syed's* teachings.

Therefore, *Wisotzki*, *Koga*, and *Syed* do not provide any motivation for the ordinary artisan to arrive at the invention set forth in claims 33-44, which recites specific sugars and sugar subsets. Although the Office combines the teachings of each of

*Wisotzki, Koga, and Syed* with the teachings of *Buheitel* and *Naito*, nothing in *Buheitel* or *Naito* provides any motivation to select specific sugars, either alone or in combination with the primary references. Accordingly, Appellants respectfully submit that the Office has not established a *prima facie* case of obviousness with respect to claims 33-44. Thus, for at least the foregoing reasons, they respectfully submit this rejection is error and should be reversed.

**E. Claims 47-50 and 52 Are Separately Patentable Under 35 U.S.C. § 103(a) Because The Office Points To No Reasons Why The Ordinary Artisan Would Have Been Motivated To Include One Or More Additional Sugars In The Composition Used In The Methods**

Appellants respectfully submit that claims 47-50 and 52 are also independently patentable under 35 U.S.C. § 103(a). Those claims recite that the method comprises applying a composition that comprises at least one additional sugar. For the reasons set forth above, the Office has not established a *prima facie* case of obviousness with respect to independent claim 30. Further, the Office has not pointed to any teachings in *Wisotzki, Koga, or Syed*, either alone or in combination with *Buheitel* or *Naito*, that would motivate the ordinary artisan to include an additional sugar in the composition, as recited in claims 47-50 and 52. The Office has therefore failed to establish a *prima facie* case with respect to claims 47-50 and 52. Accordingly, Appellants respectfully submit that claims 47-50 and 52 are independently patentable and that the final rejection of those claims should be reversed.




**VIII. CONCLUSION**

For the reasons given above, pending claims 30-56 are allowable and reversal of the Office's rejections is respectfully requested. Appellants respectfully submit the claims are supported and enabled by the specification, and that the Office has failed to establish that the claims are *prima facie* obvious over the cited references. Further, Appellants respectfully submit that claims 33-44, 47-50 and 52 are separately patentable over the rejections of record.

To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this Appeal Brief, such extension is respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,  
GARRETT & DUNNER, L.L.P.

  
JESSICA H. ROARK

Dated: December 1, 2006

By: Reg. No. 54,869 For:                       
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**IX. Claims Appendix to Appeal Brief Under Rule 41.37(c)(1)(viii)**

1- 29. (Withdrawn)

30. (Previously Presented) A method of protecting a keratinous fiber from extrinsic damage or repairing a keratinous fiber following extrinsic damage comprising applying to said keratinous fiber a composition comprising at least one sugar chosen from C3 to C5 monosaccharides and derivatives thereof; and

heating said keratinous fiber to at least 45°C,

wherein said at least one sugar is present in an amount effective to protect said keratinous fiber or repair said keratinous fiber,

further wherein said composition is applied prior to said heating or during said heating,

wherein protecting a keratinous fiber means preserving a greater degree of the  $\alpha$ -structure and/or the tensile strength of the keratinous fiber following treatment of the keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition; and

wherein repairing a damaged keratinous fiber means increasing the  $\alpha$ -structure and/or tensile strength of the damaged keratinous fiber following treatment of the damaged keratinous fiber with said composition as compared to not treating the keratinous fiber with said composition.

31. (Previously Presented) The method according to claim 30, wherein said C3 to C5 monosaccharides are chosen from pentoses.

32. (Previously Presented) The method according to claim 31, wherein said pentoses are chosen from aldopentoses and ketopentoses.

33. (Previously Presented) The method according to claim 32, wherein said aldopentoses are chosen from xylose, arabinose, lyxose, and ribose.

34. (Previously Presented) The method according to claim 32, wherein said ketopentoses are chosen from ribulose and xylulose.

35. (Previously Presented) The method according to claim 30, wherein said C3 to C5 monosaccharides are chosen from tetroses.

36. (Previously Presented) The method according to claim 35, wherein said tetroses are chosen from aldotetroses and ketotetroses.

37. (Previously Presented) The method according to claim 36, wherein said aldotetroses are chosen from erythrose and treose.

38. (Previously Presented) The method according to claim 30, wherein said at least one sugar is erythrulose.

39. (Previously Presented) The method according to claim 30, wherein said C3 to C5 monosaccharides are chosen from trioses.

40. (Previously Presented) The method according to claim 39, wherein said trioses are chosen from aldotrioses and ketotrioses.

41. (Previously Presented) The method according to claim 30, wherein said at least one sugar is glyceraldehyde.

42. (Previously Presented) The method according to claim 30, wherein said at least one sugar is dihydroxyacetone.

43. (Previously Presented) The method according to claim 30, wherein said C3 to C5 monosaccharides are chosen from furanoses and derivatives thereof.

44. (Previously Presented) The method according to claim 30, wherein said derivatives of C3 to C5 monosaccharides are chosen from amine derivatives, hemiacetal derivatives, hemiketal derivatives, and oxidized derivatives.

45. (Previously Presented) The method according to claim 30, wherein said derivatives of C3 to C5 monosaccharides are chosen from dimers and oligomers of said C3 to C5 monosaccharide.

46. (Previously Presented) The method according to claim 30, wherein said at least one sugar is xylobiose.

47. (Previously Presented) The method according to claim 30, wherein said composition further comprises at least one additional sugar, said at least one additional sugar being different from said C3 to C5 monosaccharides and derivatives thereof.

48. (Previously Presented) The method according to claim 47, wherein said at least one additional sugar is chosen from monosaccharides, disaccharides, and polysaccharides.

49. (Previously Presented) The method according to claim 48, wherein said monosaccharides are chosen from hexoses.

50. (Previously Presented) The method according to claim 49, wherein said hexoses are chosen from allose, altrose, glucose, mannose, gulose, idose, galactose, talose, sorbose, psicose, fructose, and tagatose.

51. (Previously Presented) The method according to claim 30, wherein said at least one sugar is present in said composition at a concentration ranging from 0.01% to 5.00% relative to the total weight of the composition.

52. (Previously Presented) The method according to claim 47, wherein said at least one additional sugar is present in said composition at a concentration ranging from 0.01% to 5.00% relative to the total weight of the composition.

53. (Previously Presented) The method according to claim 30, wherein said composition is in the form of a liquid, oil, paste, stick, dispersion, emulsion, lotion, gel, or cream.

54. (Previously Presented) The method according to claim 30, wherein said keratinous fiber is chosen from hair, eyelashes, and eyebrows.

55. (Previously Presented) The method according to claim 30, wherein said extrinsic damage is caused by heating, UV radiation, or chemical treatment.

56. (Previously Presented) The method according to claim 30, wherein said composition protects a keratinous fiber from extrinsic damage and repairs a keratinous fiber following extrinsic damage.

**X. Evidence Appendix to Appeal Brief Under Rule 41.37(c)(1)(ix)**

No evidence submitted pursuant to §§ 1.130-1.132 or any other evidence entered by the Office is relied upon by Appellants in this appeal.

**XI. Related Proceedings Appendix to Appeal Brief Under Rule 41.37(c)(1)(x)**

No decisions in related proceedings were identified in this Appeal Brief.